

CLAIMS

It is claimed:

1. A method of providing transparent proxy services to a user of a client device, the client device having a browser for retrieving digital content from a data network, wherein the client device, a proxy server and a remote server are connected to the data network, the method comprising

the proxy server receiving a first request from the browser for a first unit of digital content, wherein there is a remote server hostname associated with the remote server and the first request includes the remote server hostname for referencing the first unit of digital content

the proxy server requesting the first unit of digital content from the remote server

the proxy server receiving the first unit of digital content from the remote server

the proxy server parsing the first unit of digital content for references to the remote server

the proxy server modifying at least one reference to the remote server in the first unit of digital content to thereby form a modified first unit of digital content by inserting a surrogate server hostname into the at least one reference, wherein the surrogate server hostname is different from the remote server hostname

- the proxy server transmitting the modified first unit of digital content to the browser.
2. The method of providing transparent proxy services to a user of a client device of claim 1, wherein there is a proxy server hostname associated with the proxy server, and the surrogate server hostname is the proxy server hostname.
3. The method of providing transparent proxy services to a user of a client device of claim 1, the method further comprising the proxy server receiving a second request from the browser for a second unit of digital content, wherein the second request identifies the surrogate server hostname as a source of the second unit of digital content.
4. The method of providing transparent proxy services to a user of a client device of claim 3, the method further comprising
- the proxy server modifying the second request to a modified second request by removing the surrogate server hostname from the second request
- the proxy server transmitting the modified second request to the remote server.
5. The method of providing transparent proxy services to a user of a client device of claim 1, wherein the remote server comprises a web server and the data network utilizes TCP/IP and HTTP protocols, the modifying step comprising appending the surrogate server hostname to the remote server hostname in the at least one reference.

6. The method of providing transparent proxy services to a user of a client device of claim 1, wherein the remote server comprises a web server and the data network utilizes TCP/IP and HTTP protocols, wherein the at least one reference includes a local path, the modifying step comprising

inserting the surrogate server hostname into the at least one reference in place of the remote server hostname

making the remote server hostname server part of the local path of the at least one reference.

7. The method of providing transparent proxy services to a user of a client device of claim 6, wherein the remote server hostname comprises plural characters, the modifying step further comprising reversing the characters in the remote server hostname to thereby make the remote server hostname read backwards.

8. The method of providing transparent proxy services to a user of a client device of claim 7, wherein the remote server hostname includes one or more periods (“.”), the modifying step further comprising changing the periods to slashes (“/”) in the reversed remote server hostname.

9. The method of providing transparent proxy services to a user of a client device of claim 7, the modifying step further comprising inserting a separator between the reversed hostname of

the remote server and the remainder of the path.

10. The method of providing transparent proxy services to a user of a client device of claim 9 wherein the separator comprises a caret (“^”).

11. The method of providing transparent proxy services to a user of a client device of claim 1, the method further comprising inserting a base reference tag pointing to the surrogate server into the modified remote page.

12. The method of providing transparent proxy services to a user of a client device of claim 1, the method further comprising determining if a base tag is present in the remote page, and if so, then modifying the base tag to point to the surrogate server by replacing the remote server hostname with the surrogate server hostname.

13. The method of providing transparent proxy services to a user of a client device of claim 1, the parsing step comprising identifying a first reference, wherein the first reference is to be displayed by the browser and therefore would be visible to the user, the method further comprising not modifying the first reference.

14. The method of providing transparent proxy services to a user of a client device of claim 1, the parsing step comprising identifying a first reference within a javascript construct, the method further comprising inserting a first javascript function into the modified remote page

for modifying references, and inserting a call to the first javascript function into the javascript construct, whereby the first reference is encapsulated in the function call.

15. The method of providing transparent proxy services to a user of a client device of claim 14, wherein the javascript construct, when performed would force a page reload by the browser.

16. The method of providing transparent proxy services to a user of a client device of claim 1,

the parsing step comprising identifying a first reference which is associated with any of the following HTML tags: <SRC="">, <HREF="">, <ACTION="">, "<META CONTENT='#;URL'>"

the modifying step comprising modifying the first reference.

17. The method of providing transparent proxy services to a user of a client device of claim 1, the parsing step comprising identifying a first reference, wherein the first reference ends with an extension indicating that content identified by the first reference is binary data, the method further comprising not modifying the first reference.

18. The method of providing transparent proxy services to a user of a client device of claim 1, the parsing step comprising identifying a first reference, wherein the first reference includes a hostname other than the remote server hostname, the method further comprising not

modifying the first reference.

19. The method of providing transparent proxy services to a user of a client device of claim 1, the parsing step comprising identifying a first reference, wherein the first reference includes a hostname other than the remote server hostname and the first reference comprises a link, the modifying step comprising modifying the reference to provide an error message to the user if the user selects the link.

20. The method of providing transparent proxy services to a user of a client device of claim 1, the parsing step comprising identifying a first reference, wherein the first reference is a relative reference or an absolute reference relative to root, the method further comprising not modifying the first reference.

21. The method of providing transparent proxy services to a user of a client device of claim 1, the step of receiving the first unit of digital content from the remote server further comprising receiving a header from the remote server which is of a type which will cause the browser to load a new page, wherein the header includes a first reference including the remote server hostname

the method further comprising modifying the first reference

the method further comprising the proxy server transmitting the modified header to the browser.

22. The method of providing transparent proxy services to a user of a client device of claim 21, wherein the header comprises "Location".

23. The method of providing transparent proxy services to a user of a client device of claim 21, wherein the header comprises "Content-Location".

24. The method of providing transparent proxy services to a user of a client device of claim 1,

the step of receiving the first unit of digital content from the remote server further comprising receiving a header from the remote server which is of a type which will cause the browser to set a cookie, wherein the header includes a first reference including the remote server hostname

the method further comprising modifying the first reference

the method further comprising the proxy server transmitting the modified header to the browser.

25. A proxy server for providing transparent proxy services to a user of a client device, the client device having a browser for retrieving digital content from a data network, wherein the client device, the proxy server and a remote server are connected to the data network, the remote server having a remote server host name, the proxy server comprising computer software code for

receiving a first request from the browser for a first unit of digital content, wherein there is a remote server hostname associated with the remote server and the first request includes the remote server hostname for referencing the first unit of digital content

requesting the first unit of digital content from the remote server

receiving the first unit of digital content from the remote server

parsing the first unit of digital content for references to the remote server

modifying at least one reference to the remote server in the first unit of digital content to thereby form a modified first unit of digital content by inserting a surrogate server hostname into the at least one reference, wherein the surrogate server hostname is different from the remote server hostname

transmitting the modified first unit of digital content to the browser.

26. The proxy server for providing transparent proxy services to a user of a client device of claim 25, wherein there is a proxy server hostname associated with the proxy server, and the surrogate server hostname is the proxy server hostname.

27. The proxy server for providing transparent proxy services to a user of a client device of claim 25, the computer software code further for receiving a second request from the browser for a second unit of digital content, wherein the second request identifies the surrogate server hostname as a source of the second unit of digital content.

28. The proxy server for providing transparent proxy services to a user of a client device of claim 27, the computer software code further for

modifying the second request to a modified second request by removing the surrogate server hostname from the second request

transmitting the modified second request to the remote server.

29. The proxy server for providing transparent proxy services to a user of a client device of claim 25, wherein the remote server comprises a web server and the data network utilizes TCP/IP and HTTP protocols, the computer software code for modifying comprising computer software code for appending the surrogate server hostname to the remote server hostname in the at least one reference.

30. The proxy server for providing transparent proxy services to a user of a client device of claim 25, wherein the remote server comprises a web server and the data network utilizes TCP/IP and HTTP protocols, wherein the at least one reference includes a local path, the computer software code for modifying comprising the computer software code for

inserting the surrogate server hostname into the at least one reference in place of the remote server hostname

making the remote server hostname server part of the local path of the at least one reference.

31. The proxy server for providing transparent proxy services to a user of a client device of claim 30, wherein the remote server hostname comprises plural characters, the computer software code for modifying further comprising computer software code for reversing the characters in the remote server hostname to thereby make the remote server hostname read backwards.

32. The proxy server for providing transparent proxy services to a user of a client device of claim 31, wherein the remote server hostname includes one or more periods (“.”), the computer software code for modifying further comprising computer software code for changing the periods to slashes (“/”) in the reversed remote server hostname.

33. The proxy server for providing transparent proxy services to a user of a client device of claim 31, the computer software code for modifying further comprising computer software code for inserting a separator between the reversed hostname of the remote server and the remainder of the path.

34. The proxy server for providing transparent proxy services to a user of a client device of claim 31 wherein the separator comprises a caret (“^”).

35. The proxy server for providing transparent proxy services to a user of a client device of claim 25, further comprising computer software code for inserting a base reference tag pointing to the surrogate server into the modified remote page.

36. The proxy server for providing transparent proxy services to a user of a client device of claim 25, further comprising computer software code for determining if a base tag is present in the remote page, and if so, then modifying the base tag to point to the surrogate server by replacing the remote server hostname with the surrogate server hostname.

37. The proxy server for providing transparent proxy services to a user of a client device of claim 25, the computer software code for parsing comprising computer software code for identifying a first reference, wherein the first reference is to be displayed by the browser and therefore would be visible to the user, the proxy server further comprising computer software code for not modifying the first reference.

38. The proxy server for providing transparent proxy services to a user of a client device of claim 25, the computer software code for parsing comprising computer software code for identifying a first reference within a javascript construct, the proxy server further comprising computer software code for inserting a first javascript function into the modified remote page for modifying references, and inserting a call to the first javascript function into the javascript construct, whereby the first reference is encapsulated in the function call.

39. The proxy server for providing transparent proxy services to a user of a client device of claim 38, wherein the javascript construct, when performed would force a page reload by the browser.

- 40.** The proxy server for providing transparent proxy services to a user of a client device of claim 25

the computer software code for parsing comprising computer software code for identifying a first reference which is associated with any of the following HTML tags: <SRC="">, <HREF="">, <ACTION="">, "<META CONTENT='#;URL'>"

the computer software code for modifying comprising computer software code for modifying the first reference.

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41. The proxy server for providing transparent proxy services to a user of a client device of claim 25, the computer software code for parsing comprising computer software code for identifying a first reference, wherein the first reference ends with an extension indicating that content identified by the first reference is binary data, the proxy server further comprising computer software code for not modifying the first reference.

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42. The proxy server for providing transparent proxy services to a user of a client device of claim 25, the computer software code for parsing comprising computer software code for identifying a first reference, wherein the first reference includes a hostname other than the remote server hostname, the proxy server further comprising computer software code for not modifying the first reference.

- 43.** The proxy server for providing transparent proxy services to a user of a client device of

claim 25, the computer software code for parsing comprising computer software code for identifying a first reference, wherein the first reference includes a hostname other than the remote server hostname and the first reference comprises a link, the computer software code for modifying comprising computer software code for modifying the reference to provide an error message to the user if the user selects the link.

44. The proxy server for providing transparent proxy services to a user of a client device of claim 25, the computer software code for parsing comprising computer software code for identifying a first reference, wherein the first reference is a relative reference or an absolute reference relative to root, the proxy server further comprising computer software code for not modifying the first reference.

45. The proxy server for providing transparent proxy services to a user of a client device of claim 25

the computer software code for receiving the first unit of digital content from the remote server further comprising computer software code for receiving a header from the remote server which is of a type which will cause the browser to load a new page, wherein the header includes a first reference including the remote server hostname

the proxy server further comprising computer software code for modifying the first reference

the proxy server further comprising computer software code for transmitting the

modified header to the browser.

46. The method of providing transparent proxy services to a user of a client device of claim 45, wherein the header comprises “Location”.

47. The method of providing transparent proxy services to a user of a client device of claim 45, wherein the header comprises “Content-Location”.

48. The proxy server for providing transparent proxy services to a user of a client device of claim 25

the computer software code for receiving the first unit of digital content from the remote server further comprising computer software code for receiving a header from the remote server which is of a type which will cause the browser to set a cookie, wherein the header includes a first reference including the remote server hostname

the proxy server further comprising computer software code for modifying the first reference

the proxy server further comprising computer software code for transmitting the modified header to the browser.

49. A proxy server for providing transparent proxy services to a user of a client device, the client device having a browser for retrieving digital content from a data network, wherein the

client device, the proxy server and a remote server are connected to the data network, the remote server having a remote server host name, the proxy server comprising

means for receiving a first request from the browser for a first unit of digital content, wherein there is a remote server hostname associated with the remote server and the first request includes the remote server hostname for referencing the first unit of digital content

means for requesting the first unit of digital content from the remote server

means for receiving the first unit of digital content from the remote server

means for parsing the first unit of digital content for references to the remote server

means for modifying at least one reference to the remote server in the first unit of digital content to thereby form a modified first unit of digital content by inserting a surrogate server hostname into the at least one reference, wherein the surrogate server hostname is different from the remote server hostname

means for transmitting the modified first unit of digital content to the browser.

50. The proxy server for providing transparent proxy services to a user of a client device of claim 49, wherein there is a proxy server hostname associated with the proxy server, and the surrogate server hostname is the proxy server hostname.

51. The proxy server for providing transparent proxy services to a user of a client device of

claim 49 further comprising means for receiving a second request from the browser for a second unit of digital content, wherein the second request identifies the surrogate server hostname as a source of the second unit of digital content.

52. The proxy server for providing transparent proxy services to a user of a client device of claim 51, further comprising

means for modifying the second request to a modified second request by removing the surrogate server hostname from the second request

means for transmitting the modified second request to the remote server.

53. The proxy server for providing transparent proxy services to a user of a client device of claim 49, wherein the remote server comprises a web server and the data network utilizes TCP/IP and HTTP protocols, the means for modifying comprising means for appending the surrogate server hostname to the remote server hostname in the at least one reference.

54. The proxy server for providing transparent proxy services to a user of a client device of claim 49, wherein the remote server comprises a web server and the data network utilizes TCP/IP and HTTP protocols, wherein the at least one reference includes a local path, the means for modifying comprising

means for inserting the surrogate server hostname into the at least one reference in place of the remote server hostname

means for making the remote server hostname server part of the local path of the at least one reference.

55. The proxy server for providing transparent proxy services to a user of a client device of claim 54, wherein the remote server hostname comprises plural characters, the means for modifying further comprising means for reversing the characters in the remote server hostname to thereby make the remote server hostname read backwards.

56. The proxy server for providing transparent proxy services to a user of a client device of claim 55, wherein the remote server hostname includes one or more periods (“.”), the means for modifying further comprising means for changing the periods to slashes (“/”) in the reversed remote server hostname.

57. The proxy server for providing transparent proxy services to a user of a client device of claim 55, the means for modifying further comprising means for inserting a separator between the reversed hostname of the remote server and the remainder of the path.

58. The proxy server for providing transparent proxy services to a user of a client device of claim 55 wherein the separator comprises a caret (“^”).

59. The proxy server for providing transparent proxy services to a user of a client device of claim 49, further comprising means for inserting a base reference tag pointing to the

surrogate server into the modified remote page.

60. The proxy server for providing transparent proxy services to a user of a client device of claim 49, further comprising means for determining if a base tag is present in the remote page, and if so, then modifying the base tag to point to the surrogate server by replacing the remote server hostname with the surrogate server hostname.

61. The proxy server for providing transparent proxy services to a user of a client device of claim 49, the means for parsing comprising means for identifying a first reference, wherein the first reference is to be displayed by the browser and therefore would be visible to the user, the proxy server further comprising means for not modifying the first reference.

62. The proxy server for providing transparent proxy services to a user of a client device of claim 49, the means for parsing comprising means for identifying a first reference within a javascript construct, the proxy server further comprising means for inserting a first javascript function into the modified remote page for modifying references, and inserting a call to the first javascript function into the javascript construct, whereby the first reference is encapsulated in the function call.

63. The proxy server for providing transparent proxy services to a user of a client device of claim 62, wherein the javascript construct, when performed would force a page reload by the browser.

64. The proxy server for providing transparent proxy services to a user of a client device of claim 49

the means for parsing comprising means for identifying a first reference which is associated with any of the following HTML tags: <SRC="">, <HREF="">, <ACTION="">, “<META CONTENT='#;URL'>”

the means for modifying comprising means for modifying the first reference.

65. The proxy server for providing transparent proxy services to a user of a client device of claim 49, the means for parsing comprising means for identifying a first reference, wherein the first reference ends with an extension indicating that content identified by the first reference is binary data, the proxy server further comprising means for not modifying the first reference.

66. The proxy server for providing transparent proxy services to a user of a client device of claim 49, the means for parsing comprising means for identifying a first reference, wherein the first reference includes a hostname other than the remote server hostname, the proxy server further comprising means for not modifying the first reference.

67. The proxy server for providing transparent proxy services to a user of a client device of claim 49, the means for parsing comprising means for identifying a first reference, wherein the first reference includes a hostname other than the remote server hostname and the first

reference comprises a link, the means for modifying comprising means for modifying the reference to provide an error message to the user if the user selects the link.

68. The proxy server for providing transparent proxy services to a user of a client device of claim 49, the means for parsing comprising means for identifying a first reference, wherein the first reference is a relative reference or an absolute reference relative to root, the proxy server further comprising means for not modifying the first reference.

69. The proxy server for providing transparent proxy services to a user of a client device of claim 49

the means for receiving the first unit of digital content from the remote server further comprising means for receiving a header from the remote server which is of a type which will cause the browser to load a new page, wherein the header includes a first reference including the remote server hostname

the proxy server further comprising means for modifying the first reference

the proxy server further comprising means for transmitting the modified header to the browser.

70. The method of providing transparent proxy services to a user of a client device of claim 69, wherein the header comprises “Location”.

71. The method of providing transparent proxy services to a user of a client device of claim 69, wherein the header comprises “Content-Location”.

72. The proxy server for providing transparent proxy services to a user of a client device of claim 49

the means for receiving the first unit of digital content from the remote server further comprising means for receiving a header from the remote server which is of a type which will cause the browser to set a cookie, wherein the header includes a first reference including the remote server hostname

the proxy server further comprising means for modifying the first reference

the proxy server further means for transmitting the modified header to the browser.

73. A computer program stored on a computer readable medium, the computer program for providing transparent proxy services to a user of a client device, the client device having a browser for retrieving digital content from a data network, wherein the client device, the proxy server and a remote server are connected to the data network, the remote server having a remote server host name, the computer program comprising instructions for

receiving a first request from the browser for a first unit of digital content, wherein there is a remote server hostname associated with the remote server and the first request includes the remote server hostname for referencing the first unit of digital content

requesting the first unit of digital content from the remote server

receiving the first unit of digital content from the remote server

parsing the first unit of digital content for references to the remote server

modifying at least one reference to the remote server in the first unit of digital content to thereby form a modified first unit of digital content by inserting a surrogate server hostname into the at least one reference, wherein the surrogate server hostname is different from the remote server hostname

transmitting the modified first unit of digital content to the browser.

74. The computer program for providing transparent proxy services to a user of a client device of claim 73, wherein there is a proxy server hostname associated with the proxy server, and the surrogate server hostname is the proxy server hostname.

75. The computer program for providing transparent proxy services to a user of a client device of claim 73 further comprising instructions for receiving a second request from the browser for a second unit of digital content, wherein the second request identifies the surrogate server hostname as a source of the second unit of digital content.

76. The computer program for providing transparent proxy services to a user of a client device of claim 75 further comprising instructions for

modifying the second request to a modified second request by removing the surrogate server hostname from the second request

transmitting the modified second request to the remote server.

77. The computer program for providing transparent proxy services to a user of a client device of claim 73, wherein the remote server comprises a web server and the data network utilizes TCP/IP and HTTP protocols, the instructions for modifying comprising instructions for appending the surrogate server hostname to the remote server hostname in the at least one reference.

78. The computer program for providing transparent proxy services to a user of a client device of claim 73, wherein the remote server comprises a web server and the data network utilizes TCP/IP and HTTP protocols, wherein the at least one reference includes a local path, the instructions for modifying comprising instructions for

inserting the surrogate server hostname into the at least one reference in place of the remote server hostname

making the remote server hostname server part of the local path of the at least one reference.

79. The computer program for providing transparent proxy services to a user of a client device of claim 78, wherein the remote server hostname comprises plural characters, the

instructions for modifying further comprising instructions for reversing the characters in the remote server hostname to thereby make the remote server hostname read backwards.

80. The computer program for providing transparent proxy services to a user of a client device of claim 78, wherein the remote server hostname includes one or more periods (“.”), the instructions for modifying further comprising instructions for changing the periods to slashes (“/”) in the reversed remote server hostname.

81. The computer program for providing transparent proxy services to a user of a client device of claim 78, the instructions for modifying further comprising instructions for inserting a separator between the reversed hostname of the remote server and the remainder of the path.

82. The computer program for providing transparent proxy services to a user of a client device of claim 81 wherein the separator comprises a caret (“^”).

83. The computer program for providing transparent proxy services to a user of a client device of claim 73 further comprising instructions for inserting a base reference tag pointing to the surrogate server into the modified remote page.

84. The computer program for providing transparent proxy services to a user of a client device of claim 73 further comprising instructions for determining if a base tag is present in

the remote page, and if so, then modifying the base tag to point to the surrogate server by replacing the remote server hostname with the surrogate server hostname.

85. The computer program for providing transparent proxy services to a user of a client device of claim 73, the instructions for parsing comprising instructions for identifying a first reference, wherein the first reference is to be displayed by the browser and therefore would be visible to the user, the computer program further comprising instructions for not modifying the first reference.

86. The computer program for providing transparent proxy services to a user of a client device of claim 73, the instructions for parsing comprising instructions for identifying a first reference within a javascript construct, the computer program further comprising instructions for inserting a first javascript function into the modified remote page for modifying references, and instructions for inserting a call to the first javascript function into the javascript construct, whereby the first reference is encapsulated in the function call.

87. The computer program for providing transparent proxy services to a user of a client device of claim 86, wherein the javascript construct, when performed would force a page reload by the browser.

88. The computer program for providing transparent proxy services to a user of a client device of claim 73

the instructions for parsing comprising instructions for identifying a first reference which is associated with any of the following HTML tags: <SRC="">, <HREF="">, <ACTION="">, “<META CONTENT='#;URL'>”

the instructions for modifying comprising instructions for modifying the first reference.

89. The computer program for providing transparent proxy services to a user of a client device of claim 73, the instructions for parsing comprising instructions for identifying a first reference, wherein the first reference ends with an extension indicating that content identified by the first reference is binary data, the computer program further comprising instructions for not modifying the first reference.

90. The computer program for providing transparent proxy services to a user of a client device of claim 73, the instructions for parsing comprising instructions for identifying a first reference, wherein the first reference includes a hostname other than the remote server hostname, the computer program further comprising instructions for not modifying the first reference.

91. The computer program for providing transparent proxy services to a user of a client device of claim 73, the instructions for parsing comprising instructions for identifying a first reference, wherein the first reference includes a hostname other than the remote server hostname and the first reference comprises a link, the instructions for modifying comprising

instructions for modifying the reference to provide an error message to the user if the user selects the link.

92. The computer program for providing transparent proxy services to a user of a client device of claim 73, the instructions for parsing comprising instructions for identifying a first reference, wherein the first reference is a relative reference or an absolute reference relative to root, the computer program further comprising instructions for not modifying the first reference.

93. The computer program for providing transparent proxy services to a user of a client device of claim 73

the instructions for receiving the first unit of digital content from the remote server further comprising instructions for receiving a header from the remote server which is of a type which will cause the browser to load a new page, wherein the header includes a first reference including the remote server hostname

the computer program further comprising instructions for modifying the first reference

the computer program further comprising instructions for transmitting the modified header to the browser.

94. The computer program for providing transparent proxy services to a user of a client

device of claim 93, wherein the header comprises “Location”.

95. The computer program for providing transparent proxy services to a user of a client device of claim 93, wherein the header comprises “Content-Location”.

96. The computer program for providing transparent proxy services to a user of a client device of claim 73

the instructions for receiving the first unit of digital content from the remote server further comprising instructions for receiving a header from the remote server which is of a type which will cause the browser to set a cookie, wherein the header includes a first reference including the remote server hostname

the computer program further comprising instructions for modifying the first reference

the computer program further comprising instructions for transmitting the modified header to the browser.